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1,919,508

AUTOMATIC FIRE APPARATUS

Filed March 31, 1932

FIG. 1.

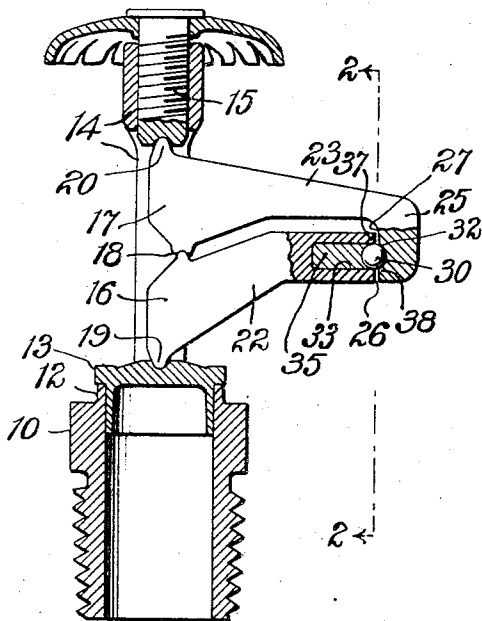


FIG. 2.

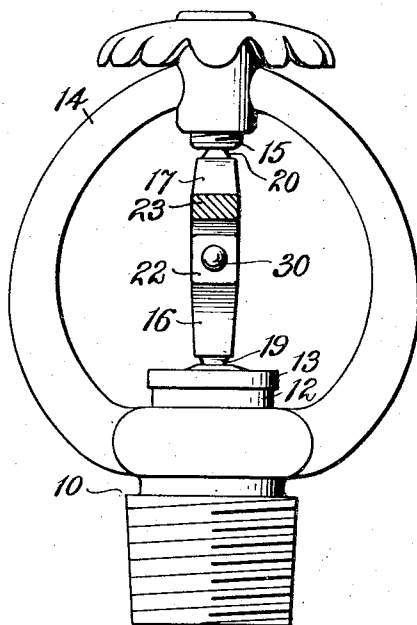


FIG. 3.

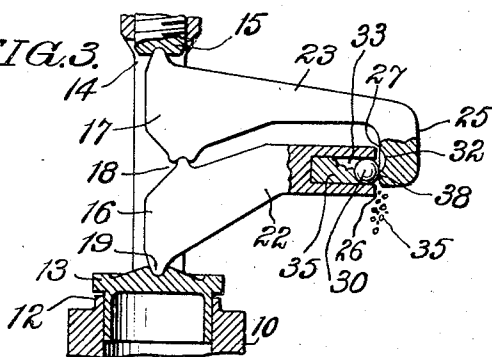


FIG. 4.

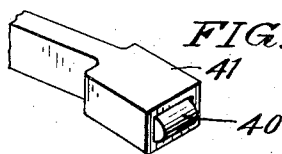


FIG. 5.

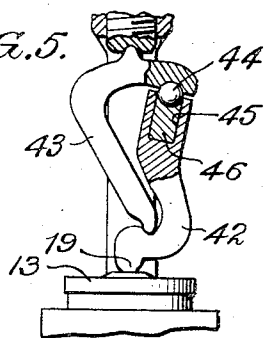
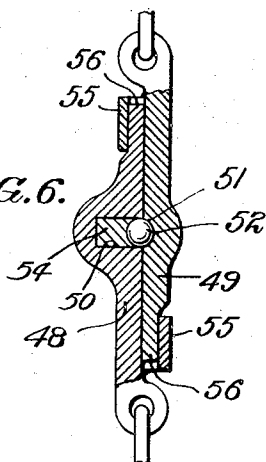


FIG. 6.



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AUTOMATIC FIRE APPARATUS

Application filed March 31, 1932. Serial No. 602,171.

My invention relates to improvements in automatic fire extinguishers, and particularly relates to devices having separable members, such as sprinkler heads, and fusible links.

The object of my invention is to provide a novel form of key for securing together the separable members.

A further object is to provide the separable members with means for movably mounting the key upon one of said members in such a manner that the key is held in locking position between said members by fusible material, and upon the melting of the fusible material the key will readily move out of locking position and release the members.

A further object is to construct a device so that a key of relatively hard metal may be used which will not be compressed and distorted under the tension applied to the separable members.

A further object is to construct the separable members with recesses which are occupied by the movable key. One of the recesses being of sufficient size to contain the fusible material for holding the key in the locking position, and to receive the entire key when the fusible material is melted, thus allowing the key to move out of locking position and release the separable members.

A further object is to provide a key in the form of a ball, or cylinder, which will readily roll out of locking position when the fusible material is melted.

These together with various other novel features of construction and arrangement of the parts, which will be more fully hereinafter described and claimed, constitute my invention.

Referring to the accompanying drawing,—Fig. 1 is a vertical sectional view of a sprinkler head embodying my invention.

Fig. 2 is a transverse vertical sectional view on line 2—2 of Fig. 1.

Fig. 3 is a partial view similar to Fig. 1 showing the separable members starting to separate.

Fig. 4 is a partial perspective view of one separable member, showing a key in the form of a cylinder.

Fig. 5 is a partial vertical sectional view similar to Fig. 1, showing a different form of my invention.

Fig. 6 is a central vertical sectional view of separable members forming a link for use

upon fire doors, windows, and the like, embodying my invention.

In the drawing in which like reference characters refer to like parts, 10 represents a sprinkler head, having the usual form of valve seat 12, normally closed by a valve cap 13. A frame 14 is mounted upon and forms part of the body of the sprinkler head, and said frame 14 carries an adjusting stop screw 15.

Separable members 16 and 17 are pivotally associated at the fulcrum 18, and have lugs 19 and 20 which engage the valve cap 13 and the stop screw 15. Said members 16 and 17 have extension arms 22 and 23, forming levers. The arm 23 has an extension part 25, extending at right angles to the length of the arm 23. Said part 25 embraces the outer end of the arm 22, thus forming adjacent surfaces 26 and 27 which are movable longitudinally relatively to each other when the members 16 and 17 are separated by the action of the air pressure acting upon the under side of the cap 13.

A key 30, formed of hard metal or other hard material, which will not be distorted under pressure, is provided for locking the separable members against the tension upon the outer ends of the arms and for preventing the adjacent surfaces 26 and 27 from moving longitudinally relatively to each other.

The key 30 is normally positioned between the adjacent surfaces 26 and 27 of the separable members. The surface 27 of the extension part 25 has formed therein a recess 32, and the end surface 26, of the arm 22, has formed therein a recess 33, which recesses are occupied by the key 30, for locking the separable members in the position shown in Fig. 1.

The recess 33 formed in the arm 22 is of sufficient length to allow the key 30 to move entirely into it for releasing the members 16 and 17.

The key 30 is held in locking position between the adjacent surfaces of the members 16 and 17 by means of fusible material 35, such as solder, paraffine, spermaceti, or other similar material fusible at a low temperature.

The key 30 is engaged between the shoulders 37 and 38, and will resist the tension of the separable members and hold them against displacement, as long as the fusible material 35 remains in the solid state.

The melting of the fusible material 35 will

tend to lubricate the surface of the key and the latter will freely roll into the recess 33, by the action of the shoulders 37 and 38, as the fusible material flows out of the recess 33, as illustrated in Fig. 3. The key 30 fits loosely into the recess 33, thus forming sufficient space around the key for the fusible material to escape when in the fluid state.

The key 30, shown in Figs. 1 to 3, is in the form of a metal ball. Fig. 4 illustrates a key 40, in the form of a cylindrical roller. The recess formed in the separable member 41, shown in Fig. 4, for the key 40, is of sufficient size to allow the key to fully enter said recess.

Fig. 5 illustrates a sprinkler head having separable members 42 and 43, designed so as to position the key 44 in a recess 45, having its longitudinal axis in nearly a vertical position. In this form the key 44 is in the form of a hard ball, which will readily move entirely into the recess 45, when the fusible material 46 is melted, thus insuring the free releasing of the members 42 and 43.

Fig. 6 illustrates my invention applied to a fusible link for fire doors and the like. The separable members 48 and 49 have adjacent surfaces with recesses 50 and 51 formed therein. The recess 50 is of sufficient size to allow the key 52 to fully enter the same for releasing the members 48 and 49. The key 52 is of solid metal and is held in locking position by the fusible material 54 which is under compression and holds the key in the plane of the adjacent surfaces of the separable members, which latter can only move longitudinally, relatively to each other, due to the keepers 55 and the tongues 56.

Heretofore devices of this character have been constructed with separable members having adjacent surfaces movable longitudinally relatively to each other, and interlocked by keys formed of soft fusible material. This construction was defective as the tension of the members was applied directly upon the fusible material.

My invention provides a key formed of hard material which is normally positioned between the adjacent surfaces of the portions of the separable members which are movable longitudinally relatively to each other. The key is freely movable transversely to said surfaces, into a recess formed in one of the members when the fusible material is melted.

By providing a circular key, which may be either of spherical or cylindrical form, the key will roll, when the fusible material is melted, due to the cam action of the shoulders upon the separable members. By this arrangement the shoulders may be located nearly upon the medial plane between the adjacent surfaces of the separable members, thus reducing the force tending to compress the fusible material.

I claim:—

1. A device of the character described comprising, separable members having adjacent surfaces movable longitudinally relatively to each other, a key positioned between said members, said members having recesses formed in their adjacent surfaces to receive said key, the recess in one of said members forming a deep pocket having a closed inner end, fusible material confined within said deep pocket arranged for normally holding the key in locking position between said members, and the recess formed in the opposite member forming a closed shallow pocket with cam surfaces arranged to force the key into said deep pocket to displace the fusible material and release said members when the fusible material is melted.

2. A device of the character described comprising, separable members having adjacent surfaces movable longitudinally relatively to each other, one of said members having a recess formed therein extending transversely relatively to said surfaces, said recess forming a deep pocket having a closed inner end, a key of relatively hard material movably mounted in said pocket, a shoulder upon the other one of said members, fusible material in said deep pocket normally positioning the key in locking engagement with said shoulder and said member upon which the shoulder is mounted having a closed shallow recess with cam surfaces arranged to force the key into said deep pocket to displace the fusible material when the latter is melted.

3. A sprinkler head comprising a frame, a valve seat in said frame, a valve cap, separable members forming a strut between said frame and said cap for holding the latter upon said seat, an extension arm upon one of the separable members, said arm having an elongated recess forming a deep pocket having a closed inner end, said pocket extending lengthwise at right angles to the end surface of the arm, a key movably mounted in said pocket, an extension arm upon the other one of said members, an extension part upon the last mentioned arm and positioned adjacent to said end surface of the first mentioned arm, fusible material within said pocket arranged for normally holding the key in locking engagement with said extension part, and said extension part having a recess forming a closed shallow pocket with cam surfaces arranged to force the key into said deep pocket to displace the fusible material and release said members when the fusible material is melted.

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